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AUTHOR DiSalvo, Joseph
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ABSTRACT

This report describes the development and offering of a 4-day short course on the use of computer-based information resources in the college science classroom. The audience for the short course was university, junior college, and community college instructional personnel in the various science disciplines. Instructional units included a survey of important scientific bibliographic information files, experience with on-line retrieval systems, assessment of documented case histories where this concept had been applied in the college science classroom, and development of unique classroom applications of this concept by the course participants. The short course was presented at the four locations of the Central Circuit of the National Science Foundation/American Association for the Advancement of Science Chautaugua Short Course Programs to a total of 65 participants during the 1975-76 academic year. Included in the document are selected examples of interim follow-up and correspondence and three selected examples of short course participants' interim projects. (Author/JD)

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DEVELOPMENT OF A SHORT COURSE TO STIMULATE THE USE OF ON-LINE BIBLIOGRAPHIC INFORMATION RETRIEVAL IN THE COLLEGE SCIENCE CLASSROOM

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FINAL REPORT

GRANT NO. SIS 7515329

NATIONAL SCIENCE FOUNDATION
DIVISION OF SCIENCE INFORMATION

formerly

(OFFICE OF SCIENCE INFORMATION SERVICE)

JOSEPH DISALVO
ASSOCIATE PROFESSOR

Division of Public & Environmental Affairs
INDIANA UNIVERSITY NORTHWEST
Gary, IN 46408
(219-980-6698)

JULY, 1976

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ABSTRACT

This report describes the development and offering of a four day short course on the USE OF COMPUTER-BASED INFORMATION RESOURCES IN THE COLLEGE SCIENCE CLASSROOM. The audience for the short course was University, College, Junior College, and Community College instructional personnel in the various science disciplines. Instructional units in the short course included a survey of important scientific bibliographic information files, experience with on-line retrieval systems, assessment of documented case histories where this concept had been applied in the college science classroom, and development of unique classroom applications of this concept by the short course participants. The short course was presented at the four locations of the Central Circuit of the NSF/AAAS Chautauqua Short Course Programs to a total of sixty five participants during academic year 1975-76.

TABLE OF CONTENTS

		PAGE
I.	Background/Need for the Course	1
II.	Preparing for the Course/Course Format	7
III.	Implementing the Course/Course Contents	29
IV.	Results Achieved/Interim Projects/Interim Follow-up	35
V.	Suggestions for Future Work	43
	References	47
	APPENDIX A Selected Examples of Interim Follow-up and Correspondence	48
	APPENDIX B Three Selected Examples of Short Course Participants' Interim Projects	69

LIST OF TABLES/FIGURES

TABLE/FIGURE	PAGES
Excerpts from AAAS Brochure	8-10
Excerpts from Author's Information Kit	11-14
Abstracts of Documented Classroom Applications	16-26
Supplementary Announcement of Short Course	28
List of Instructional Materials	30
Short Course Contents	31-32
Short Course Overview	33
Details of Special Educational On-Line Rate for Short Course Participants	39-42

FINAL REPORT

DEVELOPMENT OF A SHORT COURSE TO STIMULATE THE USE OF ON-LINE BIBLIOGRAPHIC INFORMATION RETRIEVAL IN THE COLLEGE SCIENCE CLASSROOM

I. Need for the Course

For over a decade, many information centers have been concerned with causing the effective utilization of technical information resources. For the most part, the techniques of information storage and retrieval have been developed to a state where they are both practical and operational.

For example earlier work [1,2] done at Indiana University on the automated writing of search strategies and the automated maintainence of continuing awareness profiles allows for optimum utility of the computer in retrieving information via a batch process both for restrospective searching and for current awareness. The more recent advances [3] in on-line systems have created a condition whereby the economics of information storage and retrieval by computer are very viable both for batch and real-time methods of operation. Given, then, that the technical aspects of information usage have been solved, or are at least manageable, and service may be provided at extremely low cost and on a sound accounting basis [4] one might anticipate that computerized information centers would be deluged with requests. This has hardly been the case.

In reality the reception by industry to information service and products over the past decade has been hardly more than lukewarm. Attempts to delineate the barriers to effective utilization of computerized information services tend to produce statements such as those that follow:

1. Business and industrial managers do not reward investigators who carefully examine that state of the art in an area before plunging ahead with their own work. On the surface, scientists who conduct background studies may appear to be less busy and productive to naive managers than those who rush off to the laboratory, perhaps repeating work which many others have shown to be unfruitful.

2. The sheer abundance of the literature tends to overwhelm those who might otherwise be inclined to capitalize on what previous investigators have done in the same or similar situations.

3. Librarians and/or corporate technical information center heads who have been trained in the traditional manner may not be aware of the virtues of modern information system management or worse yet may feel threatened by their existence.

4. All too often the ultimate recipient of the information has never been previously exposed to the effective use of information during his undergraduate and/or graduate studies.

Some short term advances have been made in understanding the process, but all of this work was aimed at optimizing utilization of computerized scientific information systems under existing conditions. The models developed for information usage still appear to be one of the few successful routes to pursue given that only a very small percentage of the current crop of scientists and their managers have been trained to use information. Another technique currently used by many information activities is to hold training short courses/seminars for those firms that want to participate. Again, these are aimed at optimizing on a short term basis and under existing conditions.

It appeared that a point in history had been reached where it was appropriate to plant the seeds for long-term improved utilization of our technical information resources. The approach used in this work was to cause students in the sciences to be exposed to the benefits of scientific information usage during their undergraduate development. But first, the professors of these students had to be influenced into incorporation of this material into their classrooms. It was envisioned that the development of

a "chautauqua-type" short course could help achieve this goal. Two pieces of evidence existed which tended to lend credence to this hypothesis. First, as a group, practicing chemists are relatively more receptive to usage of information. A logical conclusion is that this is because chemists receive more exposure to the literature in their studies than do most other disciplines. Secondly, those who have been exposed to the ease, economy, and benefits of using computerized scientific information systems show a marked improvement in their continued utilization of such systems throughout their professional careers.

Others who are experienced in the dissemination of scientific and technical information share the view that user training/education is a must. "The most important thing that government could do to help satisfy society's information needs, and the needs of the information profession, is to support the education of users." This is a quotation from Eugene Garfield [5], often a protagonist against government intervention in the technical information industry. Lunin in a recent editorial [6], states "One thing we have learned over the past two decades is that there is a continual - and imperative - need to educate the user."

There have been attempts at user education in various colleges and universities, and at meetings of professional societies in this country and abroad. However, if one examines university catalogs of course offerings, few if any courses on information appear for students in chemistry, biology, physics, medicine, or dentistry. Such courses generally are not even available as electives let alone as required courses. Certainly exceptions may be found to this generalization. For example Lois Lunin [7] has offered such a course for medical students at The Johns Hopkins University. The course reached approximately 25 students on a regular basis although attendance fluctuated widely during the ten week period. Milby [8] conducted a survey

of fourteen universities that offered instructional programs in the use of biological literature. Nine formal courses were analyzed in this study. None of the studied courses were aimed specifically at intelligent use of computer - based information resources. McDaniel [9] offered a user education course at the University of Arizona, which was devoted only in a small part toward use of computer based systems.

The principal task of training scientists in the use of computer - based information resources in the sciences seems to have fallen to those who are the fabricators of these resources or in some instances the sellers of information products and services originating from these resources. ASAC at Indiana University offers orientation seminars and training sessions which go somewhat beyond telling how to use ASAC and ASAC resources. The Illinois Institute of Technology Research Institute (IITRI) offers periodic briefing sessions aimed at educating users on the use of computer - based resources. Nearly all commercial producers of data bases offer some kind of user training. This type of training is useful to the limited audience it reaches. Some of the most important producers of scientific computer - based resources are the U.S. Government Agencies. Some agencies offer training assistance on how to make their systems work aimed at the 'tape-spinners' or information intermediaries. Essentially no training for users of U.S. Government computer - based resources exists.

The difficulties of educating users identified above are many and varied. The approaches taken, for example, by Lunin and by McDaniel might seem obvious to the casual observer. However, any one who has been faced with the problem of introducing a new course into a college curriculum will appreciate the difficulty of such task. Meetings with deans, department heads,

in-house accreditation, committees, etc., are time consuming and often frustrating tasks. Further, those universities which offer courses concerned with user education often find it necessary to use a person from the university library system to do the teaching in the course. Frequently, the trained librarian is reluctant [8] to accept this role. Conversely, science students may be reluctant to enroll in a course which is not taught by one of the regular science faculty members.

The approach to user education taken in this work served to overcome these two difficulties as well as others mentioned above. Further, it can easily be shown that maximum exposure per dollar spent on user training can be obtained by extending the resources to train the professors rather than to train the students. In terms of cost/benefit analysis, offering a short course to 80-100 professors is a sound idea in that this group, even by a conservative estimate, might subsequently reach 8,000 to 10,000 students per year.

III. Preparing for the Course/Course Format

As mentioned in the previous section, the short course was developed specifically for an audience of College and University professors. Early in the development of the course, it was realized that an ideal forum already existed to reach this audience. The American Association for the Advancement of Science (AAAS) Chautauqua-type Short Course Program for College Teachers was an on-going and established program which satisfied all the requirements for the course under development. Pages 6-10 of this report contain excerpts for the 1975-76 AAAS brochure which explains the AAAS short course program. These excerpts also show that the course discussed in this report was scheduled on the Central Circuit for 1975-76. Page 10 of this report contains the course description as it was announced in the AAAS 1975-76 brochure.

The major objective of the short course was to cause the participants to take this message about the virtues of modern information retrieval back to their college classrooms. Therefore, the most important preparation in giving the course was to obtain documented examples from practicing science teachers delineating how they had used this concept in their college science teaching. An information kit was prepared and circulated to known experts and other appropriate individuals who might be able to document a case history. Pages 11-18 of this report contain excerpts from the information kit which are self-explanatory. As a result of this effort, some twenty three candidate case histories resulted. Of these, eight were eventually documented and used in the short course. Abstracts of these eight case histories are given on Pages 19-26 of this report. Complete

EXCERPTS FROM AAAS BROCHURE

The NSF Chautauqua-Type Short Courses Program

The NSF Chautauqua-Type Short Courses Program is a cooperative enterprise in which the National Science Foundation, the American Association for the Advancement of Science, 12 Field Centers and two Supplementary Field Centers located at institutions of higher education, Course Directors, and college teacher participants and/or their institutions share the various aspects of the expense and the instructional and administrative functions.

The primary objective of the program is to make available to college teachers of science* as quickly as possible new knowledge about topics of current interest in such a way that materials will be directly useful in current or planned educational programs.

Because of the limited number of courses that can be offered, it is impossible to set up a program that will meet the wide range of needs for new knowledge, materials, and techniques of all teachers of undergraduate science students. An effort is made, however, to present as broad a program as possible on interdisciplinary problems and techniques for the presentation of instructional materials, including the applications of science and mathematics in college teaching.

Advice on potential courses and course directors comes from many sources including the professional societies, National Academy of Sciences–National Research Council, program officers and divisions of AAAS, NSF directorates, Chautauqua-Type Short Course participants, and individuals from the educational community. Suggestions for future courses and course directors will be welcome.

Format

As used with respect to this program, the term "short course" is a misnomer, since the work extends over a period of approximately three months. Each class meets at one of the Field Centers for a two-day session in late October or November. In addition to the instructional materials that are provided, plans are made for participants to work on projects related to the course during the next three months. To the extent possible, these interim projects are designed so that teachers and students can work together on them. In late February or early March, each class meets for the second two-day session when additional instructional materials are provided, and the results of the interim projects are exchanged and discussed. The program resembles the Chautauquas of the early part of the century in that each Course Director meets classes of participants at several Field Centers on a "circuit."

Eligibility

Teachers of undergraduate students in degree-granting institutions of higher education in the United States whose teaching responsibilities are in the natural and social sciences, mathematics, and engineering (see footnote) are eligible for enrollment. In some interdisciplinary courses, a few teachers in other fields will be admitted when this would enhance the effectiveness of the courses. Any qualified teacher may apply at any Field Center. Each class is limited to 25 participants. Applications are accepted only if the applicant intends to attend both sessions and to complete an appropriate interim project.

Selection of the participants is carried out by the Field Center Coordinators. In general, the criteria for selection take into consideration fields of teaching and geographic, institutional, and other factors intended to make the courses available on as wide a basis as possible. In the interdisciplinary courses, an effort is made to select applicants who represent a wide range of teaching fields. As a general rule, applicants are not accepted for more than one course per year, and applicants who have had two previous courses usually are given preference over those who have attended several courses. The purpose of these rules is to provide opportunities for as many teachers as possible.

In selecting individuals for participation and otherwise in the administration of this program, AAAS and the cooperating Field Centers will not discriminate on the ground of race, creed, sex, color, or national origin of any applicant or participant.

Support for Participants

Through a grant from NSF, AAAS provides Course Directors with an allowance of $12.50 per participant for instructional materials. Through grants to the Field Centers, NSF provides lodging for 20 participants in each class for four nights on a double occupancy basis. Participants who wish to have single rooms must pay the difference. Participants or their institutions will pay the costs of travel, meals, and incidental expenses.

Administration

The instructional aspects of the program are developed and administered by the Office of Science Education of the American Association for the Advancement of Science (AAAS) with general direction and financial support from the National Science Foundation.

The National Science Foundation was established in 1950 by an Act of Congress as an agency of the Federal Government. Yearly appropriations are made by Congress to enable the Foundation to carry out its responsibilities to strengthen research and education in science, mathematics, and engineering.

Application

The process of application has been simplified in comparison with procedures used in previous years. One application form has replaced both the AAAS (white) form and the NSF (pink) form.

The application form is included in this announcement on page 21. You can make copies of this form if necessary. Complete the form, remove it from the announcement, and mail it to the appropriate Field Center Coordinator. You will be notified of your status as soon as it is known. Additional application forms can be obtained from any of the Field Center Coordinators.

*The word "science" is used as a general term referring to the following disciplines: the mathematical, physical, biological, medical and life sciences; engineering; and social sciences, psychology, and the history and philosophy of science; also included are interdisciplinary fields.

EXCERPTS FROM AAAS BROCHURE (Con't)

List of Courses, Field Centers, and Class Schedules

CENTRAL CIRCUIT

C- 1 Mathematical Modeling and Some Voting Situations
WILLIAM F. LUCAS, Cornell University

C- 2 Patterns of Problem Solving
MOSHE F. RUBINSTEIN, University of California – Los Angeles

C- 3 Comparative Elite Analysis: National Decision-Makers in Industrial, Pre-Industrial, and Post-Industrial Society
ROBERT D. PUTNAM, University of Michigan

C- 4 Social Aspects of Aging

(a) MILDRED M. SELTZER, Miami University, Oxford, Ohio

(b) ROBERT C. ATCHLEY, Miami University, Oxford, Ohio, and SHEILA J. MILLER, University of Tennessee

C- 5 Simple and Complex Societies: An Anthropological View of the Transformation of Traditional Peoples (SG)
ANDREJ SIMIĆ, University of Southern California

C- 6 Biology and Human Affairs
J. ALFRED CHISCON, Purdue University

C- 7 Treatment and Critical Evaluation of Experimental Data
DAVID CHAMBERS, University of Tennessee and GERALD G. JOHNSON, JR., Pennsylvania State University

C- 8 Holography (SG)
TUNG H. JEONG, Lake Forest College

C- 9 Environmental Impact and Decision-Making Processes: Case Study Approach
MURRAY FEISHER, U.S. Environmental Protection Agency

C-10 Use of Computer-Based Information Resources in Science Teaching
JOSEPH DiSALVO, Indiana University Northwest

C-11 Limits to Growth
DENNIS L. MEADOWS, Dartmouth College and LEWIS PERELMAN, Consultant on Growth and Education

C-12 Adapting Instruction to Individual Students
S. N. POSTLETHWAIT, Purdue University

C-13 Calculus – An Intuition Based, Problem Oriented Approach
WILLIAM WALTON, Education Development Center

C-14 Improving College Instruction Through Evaluation
JASON MILLMAN, Cornell University

Miami University, Charles M. Vaughn, Chairman, Department of Zoology, Oxford, Ohio 45056. Tel: (513) 529-4918

Course	1st Session	2nd Session
C-1	Oct. 13-14	Feb. 23-24
C-3	Oct. 20-21	Mar. 2
C-4(b)	Oct. 16-17	Feb. 26-27
C-5	Oct. 23-24	Mar. 4-5
C-6	Oct. 27-28	Mar. 8-9
C-7	Oct. 30-31	Mar. 11-12
C-9	Nov. 3-4	Mar. 15-16
C-10	Nov. 13-14	Mar. 25-26
C-12	Nov. 6-7	Mar. 18-19
C-13	Nov. 17-18	Mar. 29-30
C-14	Nov. 10-11	Mar. 22-23

The University of Wisconsin-Madison, Richard S. Hoffman, Assistant to the Dean, College of Engineering, 1513 University Avenue, Madison, Wisconsin 53706. Tel: (608) 262-8991

Course	1st Session	2nd Session
C-1	Oct. 16-17	Feb. 26-27
C-2	Oct. 13-14	Feb. 23-24
C-3	Oct. 23-24	Mar. 4-5
C-4(a)	Oct. 20-21	Mar. 1-2
C-5	Oct. 27-28	Mar. 8-9
C-8	Oct. 30-31	Mar. 11-12
C-9	Nov. 6-7	Mar. 18-19
C-10	Nov. 3-4	Mar. 15-16
C-12	Nov. 10-11	Mar. 22-23
C-13	Nov. 20-21	Apr. 1-2
C-14	Nov. 13-14	Mar. 25-26

The University of Missouri – Kansas City and Linda Hall Library, Henry A. Mitchell, Associate Provost for Health Sciences, 5100 Rockhill Road, Kansas City, Missouri 64110 Tel: (816) 276-1131

Course	1st Session	2nd Session
C-1	Oct. 20-21	Mar. 1-2
C-2	Oct. 16-17	Feb. 26-27
C-3	Oct. 13-14	Feb. 23-24
C-4(b)	Oct. 23-24	Mar. 4-5
C-5	Oct. 30-31	Mar. 11-12
C-7	Oct. 27-28	Mar. 8-9
C-8	Nov. 17-18	Mar. 29-30
C-9	Nov. 10-11	Mar. 22-23
C-10	Nov. 6-7	Mar. 18-19
C-11	Nov. 3-4	Mar. 15-16
C-12	Nov. 13-14	Mar. 25-26

Louisiana State University, Houston T. Karnes, Professor, Department of Mathematics, Baton Rouge, Louisiana 70803. Tel: (504) 388-1665

Course	1st Session	2nd Session
C-1	Oct. 23-24	Mar. 4-5
C-3	Oct. 16-17	Feb. 26-27
C-4(a)	Oct. 13-14	Feb. 23-24
C-5	Oct. 20-21	Mar. 1-2
C-9	Nov. 13-14	Mar. 25-26
C-10	Nov. 10-11	Mar. 22-23
C-11	Nov. 6-7	Mar. 18-19
C-12	Nov. 3-4	Mar. 15-16

EXCERPTS FROM AAAS BROCHURE (Con't)

C-10 **Use of Computer-Based Information Resources in Science Teaching**
JOSEPH DiSALVO, Division of Public and Environmental Affairs, Indiana University – Northwest

This course is an outgrowth of training sessions on effective use of modern, computerized technical information files. The training sessions formed a part of the user education program of the Aerospace Research Applications Center (ARAC) at Indiana University and were available to industrial and academic scientists as well as industrial managers and planners.

The specific objective of the course is to cause an increased awareness and understanding of technical information retrieval and searching in order to facilitate and enhance usage of these resources in the college science classrooms.

The subjects covered will include a brief introduction to information retrieval and searching by computer, a quick survey of significant computerized technical information files including costs and availability, demonstration of several important files using terminals, and description of approximately ten novel applications for use of computerized information retrieval in college science teaching.

The interim project will consist of developing and implementing a novel application of computer-based information retrieval in college science teaching. The project may be patterned after one of the cases covered or may be an entirely different one consistent with the local environment of the course participant.

The second session will consist of a review of participants' projects and a survey of several special purpose information files.

For college teachers of: natural/physical sciences. **Prerequisites:** none.

EXCERPTS FROM INFORMATION KIT FOR PERSONS
DOCUMENTING CASE HISTORIES

1. GENERAL INFORMATION

The key to successful development and subsequent presentation of the short course lies in the successful and early identification of approximately ten experts who will develop the example classroom applications to be presented in the second day of the short course. These experts will be practicing teaching members in the various science disciplines who have been innovative in using information resources or who show a flair for using computer materials in their teaching. The importance of selecting good persons is paramount since the case histories they develop will constitute the heart of the short course and must serve to inspire the participants to seek further applications and to carry the message back to the college classroom.

Following are several ideas of the principal investigator regarding potential case histories examples.

1. Development of a new or previously untaught course or unit of instruction in a course based totally or in part on information found via searching computer - based information.
2. Evaluation of a real-life industrial, university, or government research proposal for its merit or profitability based on findings discovered by retrospective and current awareness searches of appropriate resources.
3. Preparation of penetrating questions for a Ph.D candidate oral examination via use of information discovered through machine searches and comparison of effectiveness prior to the search.

EXCERPTS FROM INFORMATION KIT (Cont.)

4. Following the developments in the theory of evolution, in prosthetics, or some other interdisciplinary activity which would be virtually impossible to do without use of the ISI citation system.

5. Evaluating a technically based U.S. Government policy or current national crisis via use of information uncovered via computer searching. Such a project might take the form of a technology forecast.

6. Evaluation of potential synthesis mechanisms of an organic compound via use of Chemical Abstracts Service molecular structure and substructure files.

EXCERPTS FROM INFORMATION KIT (Cont.)

2. FORMAT/CONTENT

The case history developed should be presented to DiSalvo in the form of a report (one camera-ready typed copy will suffice) which could be understood and would be meaningful even when used out of context from the rest of the short course. Voluminous data such as lists of citations found by computer searching, etc., should be relegated to an appendix of the report. The length of the report should be such that one hour of lecture time would allow for an adequate presentation of the material.

Although the case developed and reported may be very specific and discipline oriented, several factors should be borne in mind by the developer. First, this material is going to be presented to a mixed audience (for the most part these will be Ph.D scientists from the various disciplines) along with cases developed by others in different disciplines. Secondly, the various cases are going to be presented by a single individual (a Ph.D. scientist) who would not be knowledgeable about the frontiers of research in all of the various disciplines. Regardless of the degree of specialization within a particular discipline the case should be developed in a complete manner at a level aimed at the audience described above. The developer should not assume that the audience is well versed in mathematics or computer programming should this be involved. Further, citing of an article or several articles to supply appropriate background for the case is not acceptable. Rather the developer should present a concise statement (void of jargon and acronyms) of appropriate background information so that presentation of the case history would flow smoothly without reference to additional readings. The developer should supply a single copy of any

EXCERPTS FROM INFORMATION KIT (Cont.)

article cited for background information for optional additional reading as a part of the appendix of his report. This requirement for a copy of the article does not apply to citations found through computer searching, etc., that may form the subject matter of the case history but applies only to any reading suggested in order to cause a better understanding or appreciation for the case.

The optimum type of case history will be one that the developer has already tested and/or used. Parameters such as effectiveness before and after, which files were searched by computer, costs involved, receptance by students, etc., are far more meaningful. This is not a requirement, however, and in some instances untested case histories will be very acceptable. A description of the events which led to the development of the case history, any special local conditions which might make the example more effective, conditions which might make the example less effective, suggestions for improvement, etc., will also be of significant interest to the audience.

It is anticipated that in nearly all cases the developer/author will eventually submit a copy of the report (or a condensed version of it) to some appropriate journal for publication. As such a potential copyright problem may arise. It is important that the version of the report submitted to DiSalvo shall be free of copying restrictions as up to 200 copies may be made for use in the short course and NSF reporting requirements. In all instances of use (either written or oral) appropriate credit shall be given to the author/developer.

copies of any of these case histories may be obtained as indicated on each abstract.

Another important preparation that was made was aquisition of an appropriate data terminal for access to commercial on-line systems. Any number of commercial terminals might have been suitable. A Texas Instrument Model 735 was selected because of its portability (weight of 26 lbs.), its printing speed (30cps.), and because it provided a good camera-ready copy as output (as opposed to CRT type terminals).

It was also necessary to become well-versed in the mechanics of using both the Lockheed and SDC on-line systems. Excercises were developed to exemplify the capabilities of these two systems as well as to project the salient features of each individual data base. Appropriate descriptive materials, brochures, etc., were obtained from the data base suppliers in quanties sufficient to serve as instructional handout materials to the short course participants. In the case of several data base suppliers, movies, slides, and/or workbooks were obtained and used as part of the presentation. It was ascertained very early that there was no one suitable book or other treatise which could serve as a textbook for the short course. Therefore, the instructional and reading materials consisted of an assortment. A complete list of all handout materials used is contained in the next section. As resources permit, complete copies of the handout materials may be obtained from the writer of this report.

Besides the publicity obtained for the short course via normal distribution of AAAS Chautauqua brochures, an announcement was sent to some 200 science department heads at 100 colleges and universities in the area

USE OF COMPUTERIZED BIBLIOGRAPHIC INFORMATION RETRIEVAL IN COLLEGE SCIENCE TEACHING

CASE HISTORY #75101

Author(s) Dr. Paul E. Fanta
Department of Chemistry
Illinois Institute of Technology

ABSTRACT:

A course in the use of the chemical literature has been in the curriculum of the Chemistry Department at Illinois Institute of Technology since 1946. In 1968, the course was considerably revised, and renamed "Modern Techniques in Chemical Information", to take advantage of the development at IIT Research Institute of the Computer Search Center, devoted to the exploitation of the newly created computer tape data bases in science and engineering, and in particular the Chemical Abstracts Condensates tapes.

The course meets for a two hour period during the 15 week Spring Semester and carries two credit hours for either undergraduates or graduates. Typically, half of the students are seniors in the program leading to the BS Degree in Chemistry, less than half are second year graduate students in either the MS or Ph.D. programs. The Ph.D. candidates may offer the course in lieu of a proficiency examination in a second foreign language. Each year, a few students are candidates for the MS Degree in Science Information, administered by the Humanities Department. In the period 1968-1975, enrollment each year has been approximately 20 students, so that over 150 students have completed the course. One of the students who completed the course and received the BS in Chemistry last year subsequently joined the staff of the Computer Search Center and has become a "Literature Chemist".

Three meetings of the class are now devoted to lectures and other classroom activites revolving about the problem of conducting a current awareness search through the use of Chemical Abstracts Condensates. Each student selects a topic and prepares a profile which is sent to the Computer Search Center and searched on a two week sequence of Chemical Abstracts Condensates tapes. Thanks to the close proximity and special relationship between IIT and the Research Institute, this service has been performed either gratis or for a nominal charge. Since no other clients of the Computer Search Center subscribe to a search on such a limited data base, it is impossible to accurately evaluate the cost of this service.

The most recent annual subscription rates for a Chemical Abstracts Condensates search from IITRI Computer Search Center is $290 for a profile of up to 25 terms and an output of up to 50 citations per weekly issue. By comparison of their computerized Condensates search with a tedious and much less comprehensive current awareness search using Chemical Titles, the students readily perceive the cost effectiveness of the Condensates search.

We have thus far been unable to determine how many of the students who complete the course have an opportunity to use the Chemical Abstracts Condensates service in their professional employment. However, we are confident that the few hours spent on the Condensates exercise provides the chemistry graduate with a skill which will be of enduring value in his professional career.

Number of Pages:	29
Date Entered:	September, 1975
Availability:	Complete copies of this case history may be obtained from J.DiSalvo, Indiana University Northwest.

USE OF COMPUTERIZED BIBLIOGRAPHIC INFORMATION RETRIEVAL IN COLLEGE SCIENCE TEACHING

CASE HISTORY #75102

Author(s) Dr. Theodore J. Crovello
Department of Biology
University of Notre Dame

ABSTRACT:

Biological teaching is in a period of rapid change that has been brought about, not only by the mushrooming amount of biological data that is being amassed, but also by techniques to help both professors and students to understand this ever-expanding wealth of data. In particular, the growing and sophisticated use of Computer-based Information Files (CIF) in biology promises to have an even greater effect on biological teaching than the popular audiotutorial procedures have had. Crovello (1974) discusses the overall topic of computers in biological teaching, while the present paper will concentrate on the role of CIF in biological teaching.

In any field the goal of teaching is never just information transmission, but also teaching students to expand their analytical and thinking powers. A general purpose of this paper is to demonstrate that CIF can, in fact, help students (and professors!) to expand their analytical powers as well as to retrieve desired information. If we teachers accomplish nothing else with the use of computers, we should strive to teach our students how to accept and use intelligently new tools like the computer and CIF. CIF in biological teaching is one good way to be sure that computers will enhance the professional and civic lives of our students, and not degrade them.

Specific purposes of this paper include the following:

1. to take a broader look than other papers at what CIF's might be and can do;
2. to characterize some of the many CIF's presently being created in biology, and of their value in biological teaching;
3. to present several actual (and planned) uses of CIF in biological teaching at Notre Dame;
4. to summarize our experiences over the past years in terms of such characters as costs, enthusiasm and problems;

5. to predict future trends and growth areas in the use of CAI in teaching.

Number of Pages: 29

Date Entered: September, 1975

Availability: Complete copies of this case history may be obtained from J. Bitzer, Indiana University Northwest.

USE OF COMPUTERIZED BIBLIOGRAPHIC INFORMATION
RETRIEVAL IN COLLEGE SCIENCE TEACHING

CASE HISTORY #1103

Author(s): Dr. Robert Mitchell
Professor of Plant Sciences
The University of Arizona

ABSTRACT:

This case history presents the techniques and experiences gained in teaching a college information retrieval course. The objective of this course was to provide the beginning graduate student with an understanding of the basic tools used in literature review and information retrieval techniques. An outline of the materials presented, as well as instructive comments and suggestions for improving the usefulness of literature search and survey assignments have been included. Computer retrieval techniques, methods of writing skill and of presenting talks and papers, and criteria for evaluating the work of classmates and of scientific papers were topics of this course. A recommendation is offered that a formal science information search and survey course be added to the graduate curriculum of agricultural and life science-oriented university departments.

Number of Pages: 28

Date Received: September, 1971

Availability: Complete copies of this case history may be obtained from J. Bibler, Indiana University Bookstore.

USE OF COMPUTERIZED BIBLIOGRAPHIC INFORMATION
RETRIEVAL IN UNDERGRADUATE PSYCHOLOGY

[illegible] Rivera

Author(s): Dr. Donald G. Kyllonen
Department of Psychology
Eastern Michigan University

Abstract:

Psychologists is so highly desirable to relate the subject matter to undergraduate psychology courses or assist, various techniques to research. So this may the relevancy and utility of the principles by-read [illegible] can be provided to the student. The technique was tested-are this approach by including up-to-date research examples in his lectures; however, is to also encourage to have the students on their writing to apply principles to explaining or predicting research results. To accomplish this is to be aware of [illegible] a considerable-updated database of psychological literature from recent issues of research journals. This is more required that the instructor perform regular searches of the literature (at least once per semester) to locate appropriate source material for writing questions. The use of computerized literature searching procedures greatly facilitates this task. Incorporating these searches into the day-to-day classroom [illegible] a computer-generated [illegible] bibliography [illegible] provides an optimum learning exercise. Not only does this approach provide the obvious advantages of repeatable testing, but it emphasizes the value of searching concepts and being able to apply them to new [illegible] systems.

Number of Pages: 12

Date Entered: September, 1977

Availability: Complete copies of this [illegible] may be obtained from J. Gibson, Indiana University Bookstore.

USE OF COMPUTERIZED BIBLIOGRAPHIC INFORMATION RETRIEVAL IN COLLEGE SCIENCE TEACHING

CASE HISTORY #75105

Author(s) Professor Jack Belzer
Professor Jim Williams
University of Pittsburgh

ABSTRACT:

The course in information theory is taught in our Interdisciplinary Department of Information Science (IDIS) at the University of Pittsburgh. It is also being taught by Professor Belzer at the University of Western Ontario, London, Ontario, Canada, where he is a visiting professor. This course typically has students from many disciplines and is truly a heterogeneous group relative to background, interest and discipline. Students come from biology, education, physics, chemistry, business, information science, engineering and other areas. It is a three credit course taught over a 15 week semester. Information theory is a general theory and therefore has much wider application than was originally conceived by its founder, Claude E. Shannon.

The University of Pittsburgh has had a strong interest in computerized information retrieval since the early 1960's. Several information centers exist on campus to serve faculty, students and regional industries. One of these is the Knowledge Availability Systems Center which is a NASA Regional Dissemination Center with access to over 40 computerized data files. The New York Times Information System is also available to faculty and students via a terminal link-up to the New York Times Information Bank. In 1970, the University established a Campus Based Information System (CBIS) to give faculty and students access to a wide variety of computerized information retrieval data bases. This resulted in the establishment of several Information Utilization Laboratories (IUL) around the campus. Each IUL is staffed with information specialists who can aid students and faculty in performing searches on a number of computerized systems. These IUL's interact with the Knowledge Availability Systems Center, the New York Times and other CBIS IUL's to satisfy the information needs of clients.

Both the Lockheed and SDC systems are available on a national basis to perform computerized searches as well as locally maintained files such as NASA, ERIC, ISI, Chemical Condensates and others. This environment lends itself to utilizing computerized information retrieval for class room purposes.

These computerized information retrieval resources are supported heavily by the University and research grants through the Office of Communications Programs.

Number of Pages:	25
Date Entered:	September, 1975
Availability:	Complete copies of this case history may be obtained from J. DiSalvo, Indiana University Northwest.

USE OF COMPUTERIZED BIBLIOGRAPHIC INFORMATION RETRIEVAL IN COLLEGE SCIENCE TEACHING

CASE HISTORY # 75106

Author(s) Dr. Dale Rummer
Department of Electrical Engineering
University of Kansas

ABSTRACT:

This paper reports on an experiment in the preparation of a bibliography relative to the design of electric automobiles by a class of senior electrical engineering students. The students conducted a manual search of the printed annual volumes of the Engineering Index for the years 1970 through 1974 and the monthly supplements for January through July 1975. The teacher conducted a manual search of the 1974 printed volume of Engineering Index and several on-line searches of the COMPENDIX file for 1970 through August or September 1975. The productivity as measured in citations per man hour is computed and compared for the various searches. The contents of the several bibliographies produced is compared. The relative costs of the several searches is estimated and compared. It is important to recognize that the students were not experienced in manual searching of the Engineering Index, and that the teacher was not experienced in the use of the COMPENDIX files via the Lockheed Retrieval Service. It is the opinion of this writer that the relative productivity will not change significantly as experience is gained with both the manual and automated searching process. It is necessary to utilize manual searching to validate the on-line searching and to adequately prepare for the on-line search.

Number of Pages: 19

Date Entered: September, 1975

Availability: Complete copies of this case history may be obtained from J. DiSalvo, Indiana University Northwest.

USE OF COMPUTERIZED BIBLIOGRAPHIC INFORMATION RETRIEVAL IN COLLEGE SCIENCE TEACHING

CASE HISTORY #75107

Author(s) Dr. Ronald W. Collins
Department of Chemistry
Eastern Michigan University

ABSTRACT:

Many undergraduate and graduate chemistry courses cover some aspect of chemical bonding theory and/or a discussion of molecular geometry. Students are exposed to a variety of complex, mathematical theories which attempt to rationalize the forces which are inherent in matter; i.e., the so-called chemical bonds. The students are also taught to apply some less sophisticated, empirical procedures so that they can easily make predictions about the shapes of various molecules. A problem which often arises is that a student does not have sufficient overall grasp of chemistry to provide him (her) with enough specific examples to either test his (her) ability to make predictions or to allow for correlations. Pedagogically, it would be highly desirable to have available for student use a computer-based information retrieval system from which data on specific compounds could be accessed. Since this is as yet an untested procedure, specific details cannot be given; however, overall as envisioned there would be two systems involved: (1) a standard, bibliographic literature searching routine for use in advanced classes, and (2) a smaller version of such a search program operating from a limited, assembled database for use in lower lever courses. In either event, the student would be the actual user of the computer-based retrieval system.

Number of Pages: 6

Date Entered: September, 1975

Availability: Complete copies of this case history may be obtained from J. DiSalvo, Indiana University Northwest.

USE OF COMPUTERIZED BIBLIOGRAPHIC INFORMATION RETRIEVAL IN COLLEGE SCIENCE TEACHING

CASE HISTORY # 75108

Author(s) Dr. Jerome H. Woolpy
Associate Professor of Biology
Earlham College

ABSTRACT:

Traditionally, the textbook, the lecture, and the demonstration laboratory are used at the introductory level and the emphasis is often on the axiomatic. Even though this method is tried and true - having produced the world's greatest scientists - the information and technology explosions and the concurrent development of extraordinary information retrieval systems have provoked me, along with my colleagues in the biology department and on the library staff, to attempt to broaden the base of introductory science instruction to include a major component on library.

Library skills extend the boundary conditions of knowledge beyond that of the teacher and text and if successfully taught, have the potential of extending the capability for the acquisition of knowledge into the future. In other words, a person competent in information retrieval can always update his perspective.

The library component was first introduced into our general biology course eight years ago. It was greeted initially with skepticism from staff and students, but after a few years of experimentation has become the most popular and successful aspect of the course. This component has been emulated by the chemistry department in its introductory course and has been further developed in upper class biology courses. Since its inception, student use of the science library has increased more than tenfold and we have experienced comparable increases in other information related services such as inter-library loans.

Number of Pages: 22

Date Entered: September, 1975

Availability: Complete copies of this case history may be obtained from J. DiSalvo, Indiana University Northwest.

served by the Central Chautauqua Circuit. A copy of the announcement used may be found on Page 28 of this report.

SHORT-COURSE IN USE OF COMPUTER BASED INFORMATION RESOURCES IN SCIENCE TEACHING

The objectives of the short-course are (1) to increase awareness and understanding of technical information retrieval and searching and (2) to facilitate usage of these resources in the college science classroom. It is open to college teachers of natural/physical sciences through the AAAS-NSF Chautauqua Short Course Program.

The course will be conducted by Dr. Joseph DiSalvo, Indiana University Northwest and the Aerospace Research Applications Center (ARAC) at Indiana University.

The first two-day session introduces information retrieval and searching by computer, surveys important computerized technical information files including costs and availability, demonstrates several files using terminals, and describes applications of computerized information retrieval in college science teaching. The interim independent study consists of each participant developing and implementing an application of computer based information retrieval in his teaching. The second two day session will critically review participants' projects, survey several special purpose information files, and provide more detail on acquisition and evaluation of information services.

The course will be offered at each of the following: The University of Wisconsin, Madison; The University of Missouri, Kansas City; Louisiana State University, Baton Rouge; and Miami University, Oxford, Ohio. The first two day sessions are in early November, with second two day sessions in mid March. Each of the four classes is limited and applications are accepted only if the applicant intends to attend both sessions and to complete an appropriate interim project. Partial support for participants is available.

For further information or applications contact either:

Joseph DiSalvo, Indiana University, Northwest, Gary, Indiana, 46408 (312-374-7248)

or

Carole Ganz, National Science Foundation, Office of Science Information Service, Washington, D. C. 20550 (202-632-5850).

III. Implementing the Course/Course Content

As was mentioned in the previous section, it was decided that there was no suitable textbook which could be used for the course. Accordingly a number of different handout items were prepared and used as the instructional materials. The sheer bulk of the package of instructional materials does not lend itself to inclusion in this report. Page 30 contains a complete list of all instructional materials used. Individual items or a complete set of the instructional materials may be obtained by writing the author of this report. These may be obtained at no cost for certain items and at the cost of reproduction for other items depending on supply, length of the item, etc.

Pages 31, 32,33 show the content of the short course and an overview which are self explanatory. The course was offered at the locations and dates indicated below. The numbers after each location indicate the number of participants present. A complete list containing the names, addresses and organizational affiliations of all participants may be obtained by writing the author.

FIRST TWO DAYS

November 3 and 4, 1975	Madison, WI	18
November 6 and 7, 1975	Kansas City, MO	24
November 10 and 11, 1975	Baton Rouge, LA	11
November 13 and 14, 1975	Oxford, OH	12

TOTAL - 65 participants

SECOND TWO DAYS

March 15 and 16, 1976	Madison, WI	12
March 18 and 19, 1976	Kansas City, MO	21
March 22 and 23, 1976	Baton Rouge, LA	9
March 25 and 26, 1976	Oxford, OH	9

TOTAL - 51 participants

LIST OF INSTRUCTIONAL MATERIALS

1. Schedule of lecture topics .
2. Brief description of 117 computerized information resources.
3.-10. Eight case histories of using bibliographic information retrieval in college science teaching. See Pages [illegible] of this report for abstracts.
11. Packet of descriptive information about ISI information products and services.
12. CA CONDENSATES WORKBOOK, draft copy (This item copyrighted by American Chemical Society.)
13. Packet of information describing Lockheed's DIALOG on-line system and data bases therein.
14. Packet of information describing SDC's ORBIT on-line system and data bases therein.
15. Brief review of SDC and Lockheed on-line commands and fee schedules, instructions for using communications networks for various terminals, helpful hints, etc.
16. INSPEC information package.
17. On-line search of ERIC data base.
    Subject: "Using bibliographic information retrieval in college science teaching"
18. BIOSIS PREVIEWS WORKBOOK
    (This item copyrighted by BioSciences Information Services.)
19. On-line search of FOUNDATIONS DIRECTORY data base.
    Subject: "Possible sources of support for improvement of college science teaching via use of bibliographic information retrieval"

SHORT COURSE CONTENT

First Day:

Orientation and background on technical information resources (one hour).

Survey of important technical information files including indexing practices (two hours).

Detailed discussion of two information resources with examples of searches showing salient features (four hours).
(CAS and ISI were examined).

Techniques of automated and on-line information retrieval, Boolean and Weighted term logics.
(one hour)

Second Day:

Detailed instructions, use of elementary commands, and demonstration of an on-line system (two hours).

Searching exercises by participants using the on-line systems (three hours).

Review of classroom applications developed by experts, discussion of development of interim projects by participants (three hours).

RECESS

(Participants develop projects related to using on-line information retrieval in college science teaching during the four month interval.)

Third Day:

Detailed discussion of two information resources with examples of searching showing salient features (four hours).
(BIOSIS and INSPEC were examined)

Advanced commands and techniques for using on-line systems and demonstration of these advanced techniques with on-line systems (two hours).

Searching exercises by participants using advanced on-line techniques (one hour).

Fourth Day:

Searching exercises by participants using advanced on-line techniques (cont.) (two hours).

Presentation, discussion, review, and critique of participants interim projects (four hours).

Summarization of short course (one hour).

SHORT COURSE OVERVIEW

DAY ONE	DAY TWO
Orientation and Background	Elementary Instructions and Demonstration of on-line Searching
Survey of Technical Information Files	on-line Searching Exercises by Participants
Detailed Review of two Information Resources	Review of Classroom Applications Selection of Interim Projects
Techniques of Automated Information Retrieval	

FOUR MONTH RECESS

DAY THREE	DAY FOUR
Detailed Review of two Additional Information Resources	Advanced on-line Searching Exercises (Continued)
Advanced Instructions and Demonstration of on-line Searching	Participants' Presentation and Discussion of Interim Projects
Advanced on-line Searching Exercises by Participants	Short Course Wrap-up

It was of interest to note that 31 of the original 62 participants returned for the second session. This amounts to 50% return and is somewhat higher than the 70% overall average return for all Continuation courses for 1975-76. This was particularly encouraging since the second sessions occurred during the period of spring vacation at many of the participants' institutions.

There was little advance information regarding the composition, mix of disciplines, organizational affiliation, etc., of the short course audiences at each of the four locations on the Central Circuit. Therefore, it was necessary to guess in advance about which information files to emphasize. During the first two days, the Chemistry and ISI information resources were emphasized. The audiences turned out to be heavy in these two areas so the guess was a good one. During the last two days, the Biology and Math oriented files were emphasized to cover the other major interests represented by the participants.

IV. Results Achieved/Interim Projects/Interim Follow-up

The long range objective of this project was to cause the next generation of scientists to be more aware of the value and capabilities of modern information retrieval tools and techniques. The method of achieving this is to cause regular college science professors (as opposed to librarians or information scientists) to use these concepts as a regular part of the teaching of required and elective undergraduate science courses. While the long range objective may not be measurable through the duration of this project or at the present time, there are a number of very quantitative indicators that can be tabulated which should lead to achievement of the long range goal. These indicators include but are not necessarily limited to the following:

1. How many of the short course participants did a meaningful interim project.
2. How many participants intend to do a project next time they are scheduled to teach the appropriate course.
3. How many participants include or intend to include units of instruction on information retrieval in their regular science teaching.
4. How many participants have caused their institutions to gain access (or at least look into gaining access) to technical information retrieval services.
5. How many people request copies of the short course instructional materials and also how many people contribute to the collection.
6. The general comments of AAAS and the AAAS Chautauqua Field Center coordinators regarding the short course.

All six of the above are quantitative, easily measured and/or documented, and should serve as a fair measure of the impact of this activity. Unfortunately, as of this writing, the story is not yet complete. But some of the evidence is in and is presented in this section of the report.

The subject matter for the short courses was developed and the short course was offered at the four locations on the AAAS Central Chautauqua Circuit as detailed in earlier sections of this report. Page 10 shows the course description used for the AAAS brochure. The first two days of short courses consisted of four different instructional units as follows:

1. Introduction of modern information retrieval tools and techniques,
2. a survey of important technical information resources (data bases),
3. detailed instruction on the use of an on-line search service including exercises, and
4. a review of the examples of using computerized information retrieval in college science teaching including an opportunity to conduct a search on the terminal which might be used as a part of the interim participant project.

In particular, there were two portions of the short course which really captured the imagination of the participants. For many, the short course was the first exposure to on-line retrieval of bibliographic information and it was "love at first sight". The other exciting feature was the uniqueness of the case histories which showed how this concept had been applied in the college science teaching. The eight case histories developed for the short courses served as the stimulus for many of the participants to apply this concept in their college science teaching. Abstracts for the eight case histories used may be found on Pages 16-26 of this report.

During the terminal searching exercises, each participant was given the opportunity to conduct a search on the terminal which was to form the basis or at least the start for his interim project. Not all participants were successful at their first attempt and for many further crystallizations of their thoughts was necessary. As a result, an additional 78 searches were performed during the four month interval between the first two days and the last two days of the four day short course for the participants.

One form of follow-up which emerged as a way to expose the participants' students to this concept was the telephone lecture. The short course participant would arrange for the Course Director (DiSalvo) to lecture his class by use of a speaker phone. The students had already been versed in the basics of on-line information retrieval by the short course participant based on the knowledge gained by the participant at the short course. Searches and exercises were done by the Course Director and the results relayed to the students who were interacting, improving the search strategies, etc. In one case the participant recorded both ends of the phone call and was able to use this in another class. Naturally there was no student participation at this session.

The recess between the first two days and the last two days of the short course were filled with a variety of interim follow-up activities. As mentioned above many of the short course participants needed further reiteration of there searches in order to proceed with their interim projects. Many small colleges seemed to need fiscal as well as technical information retrieval systems. The reader is referred to Appendix A of this report for selected examples which will illustrate the nature and variety of the interim support provided to the short course participants.

It became evident during the recess that low-cost access to on-line information retrieval was needed in order for the participants to develop interim projects. Through negotiations with Lockheed, a special educational instructional rate for using the Lockheed DIALOG on-line retrieval system was established. This opportunity was passed on to the participants for incorporation into and improvement of the interim projects. Pages 39 - 42 of this report details the nature of the arrangement and how it was passed on to the participants.

A portion of each of the second two-day sessions consisted of presentations by the participants. Essentially all had a report to make delineating the efforts each had made to incorporate mechanized information retrieval into their science teaching. For some, the opportunity had not arisen because of teaching schedules. For others, budget problems had frustrated their efforts. But many were able to develop very worthy interim projects. Appendix B of this report contains selected examples of some participants' interim projects.

Lockheed
PALO ALTO
RESEARCH
LABORATORY

3251 HANOVER STREET · PALO ALTO, CALIFORNIA · 94304

January 6, 1976

Dr Joseph Di Salvo
Indiana University
3400 Broadway
Gary, Indiana 46408

Dear Joe:

Thank you for your interest in using DIALOG in support of formal courses with the Graduate Library School. Let me outline a proposition for your reaction:

1. DIALOG would be available to you from 6:00 A.M. - Noon each Saturday beginning in January.

2. A limited number of data bases would be supplied at a flat rate of $15.00 per hour (including TYMSHARE charges which are $10.00 per hour commercially).

3. Initial data bases would probably be ERIC, Exceptional Children Abstracts, AIM/ARM, NTIS, NAL/CAIN and possibly the ISI data bases (Social Science Citation Index and Science Citation Index) if a no royalty arrangement can be made with them. Others I can try to negotiate if you feel particularly important.

4. We will assign a reasonable number (say 10-15) passwords under this arrangement.

5. Offline and online printing will be limited by you in order to be sure that this service does not encroach upon or compete with regular search services - say 10 items per search.

6. Manuals will be charged at normal rates ($10.00 per set), but reproduction is permitted. (Other search aids will be given at no cost.)

7. The period of this offering will extend through the 1975-76 school year.

LOCKHEED MISSILES & SPACE COMPANY, INC · A SUBSIDIARY OF LOCKHEED AIRCRAFT CORPORATION

8. You would assume that this service would be used for formal instructional purposes only in conjunction with formal classes.

If these terms are agreeable with you as they stand, please sign the attached purchase order form, and a copy of this letter; and return to me. We will then assign up to 15 passwords for your use. You will be billed monthly within 30 days of the close of the month.

We would also be interested in an evaluation from you following each class on the effectiveness of this approach together with suggestions for its improvement.

Sincerely yours,

Roger K. Summit
Manager, Information
Systems Programs

Concurrence:

Joseph Di Salvo

RKS:bc

2 enc

INDIANA UNIVERSITY NORTHWEST

INTERDEPARTMENTAL COMMUNICATION

To: Participants in DiSalvo's Short Course

From: J. DiSalvo

Telephone 312-374-7248

Dept. Chautauqua Central Circuit C - 10

Dept. ARAC - DPEA

Subj. Local use of Lockheed DIALOGUE at reduced rate

Date February 16, 1976

Joe DiSalvo

I have negotiated a special rate with Lockheed for persons who want to use the Lockheed system for instructional/educational purposes. The cost is $15 per hour (including TYMSHARE charges which are $10 per hour). There are limitations to this as follows:

A. Lockheed Limitations:

1. The only files available will be:

   1. AIM/ARM
   2. ERIC
   3. Exceptional Children Abstracts
   4. NAL/CAIN
   5. NTIS

2. This rate is available only on Saturdays as follows:

9:00am	to	3:00pm	Eastern Time
8:00am	to	2:00pm	Central Time
6:00am	to	Noon	California Time

3. On-line and Off-line printing will be limited to a combined maximum of ten items per search so as not to encroach upon or compete with regular search service.

4. This is to be used for formal instructional purposes only.

5. This is an experimental activity for the current school year, although it may be continued.

B. Other Limitations and Information:

1. You will need to supply your own terminal and pay the telephone costs from your location to the nearest TYMSHARE number.

2. If you agree to these conditions, I will give you one of my passwords and detailed instructions on how to access the system.

USE A FASTENER NO ENVELOPE NEEDED

3. You will limit your use to two hours at my expense (i.e.,$30.00). In the event you exceed two hours, your institution will reimburse me (actually the Indiana University Foundation) at the rate of $15 per hour after the first two hours.

4. In the event you plan to use this excessively, (say over 10 hours) I will help you to establish your own account at this instructional rate of $15 per hour directly with Lockheed.

If these terms are agreeable, please sign below where indicated and return the signed copy of this memo to me.

CONCURRENCE:

_____ _____

SIGNATURE DATED

City where you attended Short Course _____

Return to: Dr. Joseph DiSalvo
ARAC - DPEA
INDIANA UNIVERSITY NORTHWEST
3400 Broadway
Gary, IN 46408

V. Suggestions for Future Activity

The NSF-AAAS Chautauqua Short Course program is an excellent forum for presenting this concept to groups of college science professors. As such the course should probably be repeated on both the Eastern and Western circuits. As a result of experience gained in the first offering, the changes and improvements listed below should be incorporated into the short course along with other suggestions and feedback obtained from AAAS and the participants.

1. Preparation of a trifold brochure which gives more information than is contained in the course description in the AAAS brochure.
2. Incorporation of new classroom utilization case histories documented by participants that attended last year's short courses.
3. Preparations of better descriptions of the various data bases available for searching so that the participants might do better searching in order to get their interim projects started sooner.

Several limitations surfaced in the ability to provide complete follow-up to the short course participants and other interested persons during the first offering. These are summarized below along with the proposed improvements for the next offering.

1. The first proposal was originally aimed at only the development of the short course and appropriate instructional materials related thereto. As the project progressed, the development time was condensed considerably and the short courses were actually offered. Naturally no budgetary provision

had been made for the purchase of real-time search service and only a small portion of the previous budget could be reallocated to this activity. For the next offering, modest provision should be made for purchase of on-line search service. In addition, because of the educational nature of the searching, the two commercial vendors may agree to a substantial contribution of on-line search time for the short courses. Consider that for the previous offerings, over ninety hours of on-line time were needed during the period from the first two days through the last two days of the short course at all four locations. The retail cost of this amount of service would normally be in excess of $8,000.

2. Very few of the participants last year were able to do a satisfactory search during the brief opportunity available on location at the short course sites. Nearly all participants needed to reiterate their searches or to do entirely new searches in order to make any progress on their interim projects. The extensive use of on-line search time required and the solution thereto was discussed above. The other difficulty was the demands on the time of the Course Director, particularly for the numerous telelectures and the advance preparation needed for these as described previously. For the next offering a substantial time allocation by the Course Director should be made for this activity.

3. Many of the short course participants, their colleagues, and numerous outside interested persons expressed an interest in additional and/or first copies of the instructional materials

for the short course, and in particular for copies of the classroom application case histories. The response to these inquiries, by necessity, has consisted of transmitting the entire package of instructional materials (over 500 pages). This tends to be some what wasteful of the time of those who request the material. For the next offering, deluxe abstracts should be written for all case history examples on record and any new ones added to the collection. The use of abstracts will save resources and the time of those interested in this concept since they need only to look at summaries and then request the complete copy on only those items of interest.

A different, important, and widespread need surfaced among the short course participants at all four locations. This need may be summarized in the form of a simple question expressed by many of the small college science professors who attended the short courses. It could be stated as follows, "How can I obtain low-cost (or free) access to a real or simulated on-line system for my instructional needs?" Typically the schemes put forward in order to accomplish this objective would take the form of acquiring a small portion of each major data base. For instructional purposes it would not matter if the material was outdated and therefore of little commercial value. At the present time, it appears that three options exist:

1. Find or develop a highly transportable computer program that would run on the various small computers typically found at most small colleges. This program could be used for real-time searches of the samples of data bases described above.

2. Develop a program for a large computer that would allow for remote terminal searches of the small stale data bases described above. Users would only need to pay telephone costs.

3. Convince one or both of the two commercial operators to establish a smaller system using stale material not subject to royalties which could be offered at little or no cost for training or educational purposes.

None of these three options would be inexpensive. Therefore some effort should be expended for a feasibility study of each of these three options. The feasibility study should address at least the following considerations:

1. Will the data base suppliers agree to give away small stale portions of their resources along with the information needed to manipulate them by machine?

2. Is there a transportable retrieval program that could be used on the kind of computers typically found at small colleges? How much would it cost per installation and who should pay the bill?

3. How much would it cost to install a simulated system on a large University computer? What are the communications systems and costs available? Who should pay the bill so that it is essentially free to small colleges?

4. What are the plans of the commercial on-line vendors? If the concept interests them, who shall pay the bill?

REFERENCES

1. Ralph T. Sprague, Ph.D. Thesis, A Comparison of Systems for Selectively Disseminating Information, MSOE, Indiana University, (1968).

2. Richard W. Counts and Joseph DiSalvo, The Automated Maintenance of Current Awareness Profiles, Final Report of Project #13, NASA CONTRACT NSR-15-003-008, (1969).

3. See, for example, the Systems Development Corporation on-line capabilities on the NASA RECON system.

4. John G. Hollekamp and Joseph DiSalvo, Managerial Cost Accounting for a Technical Information Center, Final Report on Project #7, NASA CONTRACT NSR-15-003-008, (1969).

5. Eugene Garfield, Putting Our Money Where Our Needs Are, Bulletin of the ASIS, Vol. 1, June - July, p. 10.

6. Lois F. Lunin, Educating the Users - Who's Responsibility?, Bulletin of the ASIS, Vol. No. 1, June - July 1974, p. 2.

7. Lois F. Lunin, Teaching Information and Communication to a Medical Center, J. Med. Education 47: 658-660 (Aug.) 1972.

8. F. W. Milby, A Study of Instructional Programs in the Use of Biological Literature at Selected U.S. Universities, ASIS Meeting, December, 1972.

9. R. G. McDaniel, Teaching Experience in an Information Discovery Course, ASIS Meeting, December, 1972.

APPENDIX A

SELECTED EXAMPLES OF DIVISION
FOLLOW-UP AND CORRESPONDENCE

UNIVERSITY OF MISSOURI - KANSAS CITY

Western Missouri Area Health Education Center

2220 Holmes
Kansas City, Missouri 64108
Telephone (816) 421-3075

November 10, 1975

Dr. Joseph DiSalvo
Director of Industrial Services
Aerospace Research Applications Center
Indiana University - Northwest
Gary, IN 46408

Dear Joe,

We have been coordinating the Chautauqua program in Kansas City for five years and quite honestly, there has been no Course Director as quickly accepted and as warmly received than you. Several participants remarked how much they enjoyed your presentation; I trust our arrangements were satisfactory.

We are looking forward to your return in March and I hope you will leave some time for us to enjoy a Kansas City steak.

Please know you have friends in Kansas City.

Sincerely,

Henry A. Mitchell
Associate Provost for the Health Sciences
Project Administrator
Western Missouri Area Health Education Center

pj

an equal opportunity institution

RICHARD M HARRIS
Vice President, Marketing

Institute for Scientific Information
325 Chestnut Street
Philadelphia, Pennsylvania 19106, U.S.A.
Telephone 215/923-3300
Telex 84-5305
Cable: SCINFO

December 31, 1975

Dr. Joseph DiSalvo
Indiana University Northwest
3400 Broadway
Gary, Indiana

Dear Dr. DiSalvo:

Just a brief note in response to your letter which you had sent to Dr. Garfield on December 11 concerning your NSF Chautauqua Short Courses for College Teachers in the academic year of 1975-76. There is no question about the important need which you and your colleagues are fulfilling through this program. As you may know, ISI has been a firm supporter of programs of this nature and has actively encouraged people at NSF through the years to implement a program such as this.

We are all pleased to learn that ISI representatives have been able to assist in the successful implementation of this program. Please feel as though you can call upon us in the new year for similar support. Beginning with 1976, we have added a new position to our field organization. This position is occupied by Miss Diane Hoffman, who has worked in the Suny Library System. Miss Hoffman will be responsible for professional educational services at ISI, and in this capacity her mission will be to lecture and hold panel discussions at universities and colleges with the principal focus being upon faculty members and students. Perhaps Miss Hoffman may be able to assist in your program as well during the new year.

Thank you again for contacting us, and we look forward to being of service to you again wherever possible. Best wishes for 1976.

Sincerely yours,

Richard M. Harris
Vice President, Marketing

RMH:lg
cc: E. Garfield
I. Shank
M. Benkoil
A. Kennedy

NORTHEAST MISSOURI STATE UNIVERSITY

KIRKSVILLE 63501

December 14, 1975

Joseph Di Salvo
ARAC-DPEA
Indiana University NW
3400 Broadway
Gary, Indiana 46408

Dear Joseph:

Re: Inquiry from Gary Sells, participant in C-10 Use of Computor Based Information Resources in Science Teaching, Kansas City.

I have formulated a proposal which is intended to bring the Lockheed System of information retrival to our campus. I have three specific questions or/and requests which you may be able to assist me. These are:

1. What is the name and address of Tymeshare? NMSU has a Watt's Line to Kansas City and it may be possible for us to use the Tymeshare line ($10/hour) if we can make the necessary connection via address or telephone number.

2. I have proposed a budget to our administration of $500 to pay for a representative to our campus for teaching and explaining the Lockheed System. In addition I have indicated a budget of $800 for the first year. My specific question concerns projected uses of this service beyond one year. Should we consider $2000, $5000, or $8000? In other words how fast do people pick-up and use the service?

3. In order to illustrate to the Dean of Instruction the economy of search I would like to present him with a few concrete examples of the search capabilities as experienced by myself and some members of our staff working on selected problems. "If the money holds out" would it be possible to send results of a search in the following areas:

   a. Rat-cyclic AMP - Liver, kidney, gonad, muscle; other key terms: membrane receptor, hormone, growth.
      Basic investigation is to assess the affects of injected cyclic AMP on rat liver, kidney, gonad, muscle and to indicate mode of action, ie, affect on membrane receptors, hormone action and affect on growth.
   b. Same study as "a." except with cyclic GMP.
   c. Similar study to "a. and b." but basic problem is to assess effect of cyclic AMP and cyclic GMP on enzymes (Isocitric dehydrogenase, glutamine oxaloacetic transaminase (GOT), and acid and alkaline phosphatase) in rat kidney, liver, muscle, gonad. Search may take this form.
      (1) Isocitric dehydrogenase--cAMP--rat
      (2) GOT--cAMP--rat
      (3) Acid Phosphatase, cAMP--rat
      (4) Alkaline Phosphatase, cAMP--rat
      Repeat 1 thru 4 with cGMP.

These questions and/or searches may be too much! Please help me with what you can or maybe suggest an alternative.

Sincerely yours,

Gary D. Sells

Gary D. Sells
Science Dept.
NMSU
Kirksville, MO 63501

December 23, 1975

Dr. Gary D. Sells
Biology Dept.
Northeast Missouri State University
Kirksville, MO 63501

Dear Dr. Sells:

Thanks for your letter of December 14, 1975. Let me try to respond to your three questions:

1. The address of TYMSHARE is:

   TYMSHARE, Inc.
   150 N. Wacker Dr.
   Chicago, IL 60606

But I don't think you need to bother with TYMSHARE since they deal only with people who sell computer time and systems such as LOCKHEED and SDC. TYMSHARE has an arrangement with LOCKHEED to provide communications to LOCKHEED's computer. TYMSHARE charges LOCKHEED $10/hour of connect time, then LOCKHEED adds the $10/hour on to your bill. The local number for TYMSHARE's computer in Kansas City is 816-421-7444. Here is my suggestion. Find out how much it will cost you to call Kansas City on your WATS line per hour, and add this to the $10/hour to get from Kansas City to LOCKHEED. Next find out how much it costs to call LOCKHEED directly (415-493-7500) on your WATS line. Compare the two hourly rates and choose the better option. The current regular daytime rate from Kirksville, MO to Palo Alto, CA is 54¢ for the first minute and 36¢ thereafter for a total of $22.96/hour. You can probably save about 40% (you should check this out) by using your WATS line which would bring it down to about $13.77 if you dial LOCKHEED directly.

2. LOCKHEED offers two ways to pay for training.
   (1) $200 per day plus travel and subsistence (from either Washington D.C. or Palo Alto).

   (2) $50/person for a full day—minimum of 10 people required. LOCKHEED pays the travel expenses.

In either case you must pay the phone bill for calling the Kansas City TYMSHARE number. LOCKHEED provides free search time including TYMSHARE charge, during the training and at least one (sometimes two) terminal. You should bring as many terminals as you can to the training site for maximum exposure. Ideally, this would be one person per terminal but up to four people per terminal works out all right.

Dr. Cary D. Sells

December 23, 1975

Predicting the extent of usage in advance is tough. Some people will never touch it and others won't want to leave it alone. I suggest you allocate one or two or three searches to each potential faculty user per year. For budget calculation purposes, my experience is that the average tends to be about $73.00 per hour (including TYMSHARE) and each search averages about 23 minutes. This works out to an average of $28 a search, plus print costs, if any. After each user consumes his allotment, you can permit further use as funds permit but you will need to establish a management control, or back charge intramurally to the user's department, etc., so that it does not get out of hand. If any students are going to be involved, you can allow them 15-20 minutes each for a learning type of search.

3. I will certainly try to do these searches for you just after the holidays. I would prefer to do it while I have you on the phone. I will call you on January 8th or 9th to try to get this done.

Please do not hesitate to write or phone me, if I can be of any further assistance.

Sincerely,

Joseph DiSalvo

JD:jj

January 9, 1976

Dr. H.R. Pinnick, Jr.
Assistant Professor of Chemistry
Southeast Missouri State University
Cape Girardeau, Missouri 63701

Dear Dr. Pinnick:

Thanks for your letter of January 2, 1976 regarding CGRE. I am pleased that Joe DiSalvo's efforts have stimulated your interest in this field. To initiate our cooperation on this matter I am enclosing a listing of the FORTRAN program which we use for producing exams. In addition, I am sending you copies of several supporting documents which explain the formats and procedures for the proper use of this exam program. I suggest that you review these materials--perhaps with your computer center people--and determine their compatibility with your system.

If you are definitely interested, we can then provide the program, preferably on magnetic tape if your computer can handle it. Also, we can send you a huge databank (several thousand items) of questions if you wish.

Also, I would like to call your attention to the item which is marked on the enclosed copy of the latest issue of our ACS computer newsletter. Perhaps you might wish to contact Dr. Singh also about his CGRE system which is excellent for use on smaller computer systems.

Thanks for your interest in my work, and I shall be looking forward to hearing from you again soon. I will be happy to assist you in any way possible to get you started on CGRE.

Sincerely yours,

Ronald W. Collins
Professor of Chemistry
Chairman, ACS Committee
on the Role of Computers
in Chemical Education

RWC/pld
encl.
cc: J. DiSalvo

A customer from your short course!!

61 Ron

COPY

UNIVERSITY OF CALIFORNIA, SANTA BARBARA

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO

SANTA BARBARA • SANTA CRUZ

INSTITUTE FOR THE INTERDISCIPLINARY
APPLICATIONS OF ALGEBRA AND COMBINATORICS
(805) 961-3002

SANTA BARBARA, CALIFORNIA 93106

February 5, 1976

Dr. Joseph DiSalvo
Director of Industrial Services
Aerospace Research Applications Center
Indiana University - Northwest
Gary, Indiana 46408

Dear Dr. DiSalvo:

I am writing to tell you about the project that I have been working on for presentation at the second session of the Chataqua Conference on the Use of Computer-Based Information Resources in Science Teaching.

This quarter I am giving a new course that I have designed entitled "Mathematical Literature." One of the components of this course is concerned with the use of a computer data base that has been under construction here for several years. About four years ago, several of my colleagues and I decided to design and construct a bibliography on linear algebra. As originally conceived, the file was to contain bibliographic information and a summary of every item in this literature. The project is funded by the Air Force Office of Scientific Research on a grant on which I am Principal Investigator. I wrote a refinement of the American Mathematical Society Mathematical Offprint Service 1970 classification system and designed a format for the data we wished to assemble on each item in the literature. I enclose a page of typical print-outs which gives you some idea of the way that the data looks. The data is stored in our computer center and is accessible by means of a terminal. There is a text editing and retrieval system available on this campus that we are using to search the file on any Boolean function of the fields that you see in the printout: author, title, journal, keywords, classification number, language, etc. We estimate that the file will have about 10,000 items in it upon completion and we have assembled approximately 5,000 of these at this point. Approximately 1,000 items have been put in a separate file for experimental search purposes.

With your consent I would like to present a brief description of the following:

1) designing a controlled vocabulary for a mathematical data base;
2) writing instructions for bibliographers to follow;
3) format for the data (the design of a standard sheet for assembling the data);
4) designing both retrospective and current awareness searches of a mathematical data base ;
5) the data base as a teaching tool in undergraduate instruction, e.g., tracing historical developments; latest results; identifying the major workers in the field, etc.

I hope this outline seems satisfactory to you. If you have any suggestions, I would be very pleased to know about them. I look forward to seeing you in March.

Sincerely yours,

Marvin Marcus

Marvin Marcus
Institute Director and
Professor of Mathematics

MM/vkj

D 58
University of Southern Mississippi
Southern Station, Box 157
Hattiesburg, Mississippi
39401

Department of Chemistry

March 17, 1976

Dr. Joseph DiSalvo
ARAC - DPEA
Indiana University Northwest
3400 Broadway
Gary, IN 46408

Dear Dr. DiSalvo:

Due to changes in my schedule beyond my control, I will not be able to attend the second session of the NSF Chautauqua-Type Short Course C-10 on March 22 and 23. I regret that I will be unable to complete this course. I appreciate all of the useful information you passed along to us in the first session. If it would be possible for you to mail me the literature you distribute during the second session, I would really appreciate receiving it.

Sincerely yours,

Stella D. Elakovich

Stella D. Elakovich
Assistant Professor of
Chemistry

SDE/ctl

EVANGEL COLLEGE
[illegible]
Springfield, Missouri
UN 8-2811

February 24, 1976

Dr. Joe DiSalvo
Indiana University Northwest
3400 Broadway
Gary, IN 46408

Dear Dr. DiSalvo:

I attended the Kansas City session of Chautauqua Central Circuit, C-10. I am interested in designing an information system using our own library and wondered if I could get a copy of the programs used in the search. We have a small computer system and I'm sure it would be necessary to revise the programs to fit our need, but they would help serve as a guide. If it is possible, please bring a copy of these programs to the March 18, 19 sessions and I will pick them up there.

Thank you.

Yours truly,

D. Lee Schmachtenberger

Debbie Schmachtenberger

DS:kh

GENERAL MOTORS INSTITUTE

[illegible] · Flint, Michigan [illegible]

February 16, 1976

Dr. Joseph DiSalvo
ARAC - DPEA
3400 Broadway
Gary, Indiana 46408

Dear Dr. DiSalvo:

Would you please undertake another search for me. The following keywords are to be used:

1. Matrix
2. Matric ... (truncated)
3. Engineer ... (truncated)
4. Value ... (truncated)
5. Eigen ...
6. Characteristic

The following combinations are of interest:

7. (1 or 2) and 3
8. (5 or 6) and 4 and 3
9. 7 and 8 --- If these are large groups. Usually 1 or 2 will include 4,5,6.

Files to be searched: 1. COMPENDEX — File 8 File 14
2. INSPEC - M.E. and ENG. MAN. (ISMEC) — File 13
3. INSPEC - ELECTRONICS

Thank you again for your efforts on our behalf.

Sincerely,

T. E. Elsner
Associate Professor of Mathematics
Department of Mathematics
and Engineering Mechanics

TEE:fe

p 01

GMI

General Motors Institute

[illegible] West Third Avenue · Flint, Michigan [illegible]

December 11, 1979

DEC 13 [illegible]

Mr. Joseph DiStefano
ASAC-DTSA
2400 Broadway
Gary, Indiana 46408

Dear Joe:

A colleague and I would like to pursue the topics that I previously searched for more information on and disseminate selected. Please run a search for us and send abstracts. The following key word combinations are desired.

1. Multiple ⌒ Regression ⌒ Data. (redacted) & w/2a
2. Principal ⌒ Components ⌒ Regression. & w/2a
3. Bayes ⌒ Regression. (= to for truncation).
4. Time Series ⌒ Regression.

Actually, above numbers may be small, 2., 3. and 4. are combinable as

5. Regression ⌒ (Time Series or Bayes - or Principal Components).

We would like the following files searched.

✓	1. [illegible]	[illegible]
	2. [illegible]	[illegible]
✓	3. [illegible]	[illegible]
✓	4. [illegible]	
✓	5. [illegible]	[illegible]

Further, we would like microfiche copies of the articles pertaining to the enclosed abstracts. We guarantee payment if necessary. Are these items available to us on nonsubscribers for the same price? If so, can you supply us with addresses, etc.? Thank you for your time and effort.

Sincerely,

Thomas E. Dixon
Associate Professor of Mathematics
Department of Mathematics
and Engineering Mechanics

TED:

[illegible]

February 18, 1972

Prof. Thomas E. Kinsey
General Science Services
Smith and Associates
Plain, NY 48938

Dear Tom:

Enclosed are the results of the search you requested in your letter of December 22, 1971. I do very sorry to be so delinquent. Listed below are some particular comments regarding the search:

1. I did the search all five ways mentioned all five times.

2. For some reason the 81 CENTAUR output has not come yet. I will send it along under separate cover when it arrives.

3. I searched both parts of [illegible] since you did not specify which one you wanted.

4. In some cases, there were no new hits for the runs I did the fourth or fifth iterations of the search. When this happened, I went ahead and printed the remaining zero output for your information, but I printed them in the short format since you already have the longer format from prints of previous runs.

5. Please feel free to call on, if you have any questions.

You will be receiving the CENTAUR output and the microfiche on the five reports you wanted as soon as I get them. Your continued interest in this material is very encouraging.

Yours truly,

[illegible]

[illegible]

JH:jj

[illegible]

D 63

SOUTHEAST MISSOURI STATE UNIVERSITY

CAPE GIRARDEAU MISSOURI 63701

CAPE GIRARDEAU (314) 334-8511
ST. LOUIS 241-6195

April 6, 1976

Dr. Joe DiTalvo
ARAC-OPEA
Indiana University - N.W.
3400 Broadway
Gary, Indiana 46406

Dear Joe,

I was unable to get the procedure to work that you gave me for the TELENET system but after calling DIALOG, I was able to get a revised procedure to work which is as follows for an IBM 2741 EBCDIC Communications Terminal:

1. Set IBM 2741 in local mode (unit has a local-communication switch). Set accoustic coupler to full duplex.

2. Dial TELENET number. After tone is established place phone in accoustic coupler.

3. Set IBM 2741 in COM(munication) mode. Type . (period) followed by carriage return (CR)

4. Will receive from TELENET
   TELENET
   314 DL1
   TERMINAL = (enter) ibm1 (CR) (for ball 963)

5. Will receive from TELENET
   @(enter) C_b415_b20 (CR) such that $@C_b415_b20$ b = blank

6. Will receive
   415_b20_b CONNECTED

   Enter your DIALOG password

I hope that this may be of some help in the future. I am moving in the direction to try to establish our own account with DIALOG. I plan to present some information to the Science Council and if they react favorably, I then plan to present the information to the library committee. The library seems like the most likely location for the service; however, I hope to avoid the problems of Wichita State.

Sincerely,

H.R. Pinnick, Jr.
Assistant Professor of Chemistry

HRP:bb

A METROPOLITAN UNIVERSITY

UNIVERSITY OF CENTRAL ARKANSAS

March 26, 1976

Dr. Joe DeSalvo
AR AC-DPE A
Indiana University N. W.
3400 Broadway
Gary, Indiana 46408

Dear Joe:

A member of our department is interested in the metabolism of betahydroxybutyric acid and butanol by bacteria, particularly Azotobacter. It would help my campaign for the acquisition of a terminal here if I could show him how much time is saved by a computer literature search.

The key words would seem to be betahydroxybutyric acid (and polybetahydroxybutyric acid), butanol, metabolism, and bacteria. It is possible that no work has been done with Azotobacter itself as far as the metabolism of these compounds is concerned.

I will appreciate your assistance with this search.

Sincerely,

Bob

Robert T. Kirkwood
Associate Professor of Biology

38 Hits
Results Sent
4/9/76

Conway, AR 72032

Chgo. No.
312-374-7248

April 9, 1976

Dr. Herbert R. Pinnick, Jr.
Chemistry
Southeast Missouri State University
Cope Girardeau, MO 63701

Dear Dr. Pinnick:

Thanks for your letter of April 6, 1976 and the information contained therein. I am very pleased that you were finally able to communicate with Lockheed on your IBM 2741 terminal.

Enclosed are the results of the search you wanted on transesterification mechanisms.

Sincerely,

Joseph DiSalvo

JD:jj

Enclosure

INDIANA UNIVERSITY NORTHWEST
3400 BROADWAY
GARY, INDIANA 46408

DIVISION OF PUBLIC AND ENVIRONMENTAL AFFAIRS

TEL. NO. 219 887-0111
Chgo. No.
312-374-7248

April 14, 1976

Dr. Ronald S. McCuiston
Assoc. Prof. of Mathematics
Pensacola Junior College
1000 College Blvd.
Pensacola, FL 32504

Dear Dr. McCuiston:

Enclosed is the on-line print out generated as a result of doing the four searches you requested in your letter of March 31, 1976. Under separate cover I am sending you the results, i.e., the offline printing.

You will notice from the enclosed item and later when you receive the printout that Problem IV generated 480 hits on the INSPEC file. Since this was too many to print, I had only the latest 100 items printed. I hope these results prove useful to you and your collegues.

Sincerely,

Joseph DiSalvo

JD:jj

enclosure

SCHOOL OF ARTS AND SCIENCES
PENSACOLA JUNIOR COLLEGE
DEPARTMENT OF CHEMISTRY
DEPARTMENT OF MATHEMATICS
(904) 476 5410
1000 College Boulevard
Pensacola, Florida 32504

MAR 5 1976

March 31, 1976

Dr. Joseph DiSalvo
Director of Industrial Services
Aerospace Research Applications Center
Indiana University - Northwest
Gary, Indiana 46408

Dear Dr. DiSalvo:

I was a participant in your L. S. U. Short Course and would appreciate your making the following searches for me.

I. AMINIMIDES (This is for one of our organic chemists.)

II. MATHEMATICS OR SCIENCE CAREER EDUCATION IN HIGH (OR SECONDARY) SCHOOLS (Try ERIC and AIM/ARM)

III. ENGLISH CAREER EDUCATION IN HIGH (OR SECONDARY) SCHOOLS (Try ERIC and AIM/ARM)

IV. RANDOM NUMBER GENERATORS (OR PSEUDORANDOM NUMBERS) (or RANDOM NUMBERS) (Try ERIC and INSPEC and SCISEARCH)

Thanks for your help.

Sincerely,

Ronald S. McCuiston, Assoc. Prof.
Department of Mathematics

RSMcC/djw

ALBION COLLEGE
ALBION, MICHIGAN 49224

March 31, 1976

Dr. Joe DiSalvo
ARAC-DPEA
Indiana University Northwest
3400 Broadway
Gary, Indiana 46408

Dear Joe;

I am enclosing your memo on local use of Lockheed DIALØGUE at reduced rate.

I mentioned to you in Madison that Chemical Abstracts were available through the MERIT network. I am enclosing a copy of part of a handout I got at a conference on instructional computing that was held at the University of Michigan last April. It looks like a call to Professor Taylor would answer questions about the availability and suitability of that data base for distribution to the participants in your short course who want a data base they can manipulate with their own computer.

Sincerely,

John

John A. Williams, Coordinator
Academic Computing Service

JAW/he

enclosures: 2

APPENDIX B

THREE SELECTED EXAMPLES OF SHORT COURSE PARTICIPANTS' INTERIM PROJECTS

Use of Computer - Based Information Resources in Science Teaching

Interim Project

Mrs. Cynthia M. Hanchey
Dept. of Computer Science
Louisiana State University
Baton Rouge, La.

I. Introduction

Computer Science 1249- Introduction to Computer Technology (title changed from Computers and Society in 1974):

Survey designed for students interested in the uses of computers in society; use of computers in solving problems, computer architecture and organization, and use of computers in business, science, and industry.

This is a course primarily intended for non-majors to give students some insight into the hows and whys of computers. Students are introduced to flowcharting and given a small subset of Assembler language in which to program one or two small problems. Other topics covered include subscripted variables, computer hardware, trees and networks, etc.

II. The Past

Due to the diverse backgrounds of the students involved, I had each student write a term paper toward the latter part of the semester when I taught this course. The student was to write on the use of computers in his or her area of specialization. The final report could be as broad or as limited in scope as the student desired. This then tended to "tie together" the specifics learned about the computer with the student's major or general area of interest. Additionally, it required the use of the library for source material since this was not an original idea, but rather research of proposed or currently practiced applications of the computer.

III. The Future

With the availability of a system like Lockheed DIALOG this course could become unusually attractive and instructive in the sense of "hands-on" availability to a computer. Not only could the relation of computers and a student's major be made more meaningful

with library research simplified, but also the availability of on-line information retrieval could be illustrated. This would allow one to teach and relate what is being taught in the classroom to a practical level.

IV. The Present

Unfortunately this course has not been taught for quite some time for a variety of reasons. Should it be offered again in the future, I would like to attempt this new approach.

Appendix I

Students' reports have varied greatly as is to be expected; however, one area appeared frequently as evidenced by these titles:

Computers in Medicine

Automated Multiphasic Health Screening

Medical Records: Reasons for Automation and Processing Procedure

The Handling of Clinical Data by Computers

Automation of Medical Interviews

Computers in Clinical Diagnosis

Computers in the Medical Laboratory

Pharmacy and the Computer

Although my search was more specific and shorter than a student would require, I was able to list 19 references of which some obviously would be valid (See Appendix II). It is easy for one to see how a student could get "hooked"; not only does this give up-to-date references; it's also fun!

Appendix II

```
Event: Time,Seamontime,Date,Usemo,Descm,Docs,File
Enbl: 10:27:16.007,51,11 11/75,1525(0002,0003,06
? BEGIN ?

          Set Items Description
          --- ----- -----------
File07: IDC SCISEARCH 72-75 UK=39
? S MARKOV?

             1    234 MARKOV?
? S HOSPITAL (W) ADMISSION

             2      5 HOSPITAL (W) ADMISSION
? S HOSPITAL (W) ADMISSIONS

             3     14 HOSPITAL (W) ADMISSIONS
? C2DR3

             4     19 2DR3
? C1AN04

             5      0 1AN04
? S COMPUTER?

             6   1466 COMPUTER?
? S DIAGN?

             7    711 DIAGN?
? C6AN07

             8     19 6AN07
? T 8/6/1-9

1
524402  ARTICLE  A8279  8 REFS
  ANALYSIS  OF EXPERT DIAGNOSIS OF A COMPUTER SIMULATION OF CONGENITAL
HEART DISEASE  (EN)

2
477647  ARTICLE  V2129  13 REFS
  ESTIMATION  OF  DISCRETE  MULTIVARIATE  DENSITIES FOR COMPUTER-AIDED
DIFFERENTIAL DIAGNOSIS OF DISEASE  (EN)

3
458529  ARTICLE  U5175  - REFS
  COMPUTER  SIMULATION  -  TECHNIQUE  FOR  TRAINING  EDUCATIONAL
DIAGNOSTICIANS  (EN)
```

Appendix II (con't.)

```
6
444587  ARTICLE  T9271  10 REFS
  CONSTRAINTS ON VALIDITY OF COMPUTER DIAGNOSIS  <EN>

5
444162  ARTICLE  T3626  13 REFS
  COMPARISON  OF  DIAGNOSTIC  CLASSIFICATION  OF  SO CALLED IDEAL BPDS
PROFILES BY COMPUTER AND BY MAN  <CZ>

? T 6/6/6-19

6
437461  ARTICLE  I5509  3 REFS
  CONFESS  -  HUMANISTIC,  DIAGNOSTIC-PRESCRIPTIVE COMPUTER PROGRAM TO
DECREASE PERSON-TO-PERSON INTERACTION TIME DURING CONFESSION  <EN>

7
434119  MEETING AB  T5490  0 REFS
  COMPUTERIZED ASSISTANCE IN DIFFERENTIAL DIAGNOSIS  <EN>

8
437416  ARTICLE  T5202  30 REFS
  DEVELOPMENT  AND  VALIDITY OF A COMPUTERIZED METHOD FOR DIAGNOSIS OF
FUNCTIONAL  PSYCHOSES  <DIS>  -  EVALUATION  BASED ON COMPARISON WITH
CLINICAL DIAGNOSIS, PROGNOSIS, STABILITY, AND FAMILY HISTORY  <EN>
9
428739  ARTICLE  T3590  23 REFS
  COMPUTER DIAGNOSIS IN PSYCHIATRY - BAYES APPROACH  <EN>

10
437416  ARTICLE  I0347  16 REFS
  CAN COMPUTER ASSIST CLINICIANS IN PSYCHIATRIC DIAGNOSIS  <EN>

11
414278  ARTICLE  I7095  2 REFS
? DIAGNOSTICINGRES; AND PROGRAM DIAL - TUDV IN
COMPUTER ASSISTED DIAGNOSIS  <DE>

12
404432  ARTICLE  I2722  20 REFS
  COMPUTER DIAGNOSIS OF PNEUMOCONIOSIS  <EN>

13
323778  BRIEF COMM  P9301  25 REFS
  APPLICATION  OF  AN  IMAGE-COMPRESSION  -  FI  <BE-TRANSFORMATION
TECHNIQUE TO COMPUTER-AIDED DIAGNOSIS OF BRAIN T  43  <EN>
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Appendix II (cont'd.)

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$ E N D
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[illegible]

[illegible]

[illegible]

[illegible]

I. [illegible]:

1. [illegible]

2. [illegible]

3. [illegible]

4. [illegible]

II. [illegible]:

1. [illegible]

2. [illegible]

3. [illegible]

4. Preparation of the colloquia is underway and of course requires information from part two of C-10. Scheduled for June.

III. CONCLUSIONS AND REFLECTIONS:

The "Algebra of Sets" for searching data files is particularly easy for the mathematician to follow and so no problems were encountered in learning to be reasonably efficient in searching on the computer. Good knowledge of structure in the english language is extremely helpful.

Having the long and short form of the abstracts is quite convenient option when individuals are doing subsearches on printed output. The pressure for time (taught four courses) to do research was unbearable at times and surely the project suffered greatly because of this. Also, student effort is higher at GMI (in terms of contact and credit hours) especially in basic mathematics courses which are highly structured and topically crowded with just the basics. This makes it doubly difficult to get into the classroom with any project.

It is interesting that the "best" examples found for the project were pathological in type. Users of linear regression in several abstracts provided good examples of how not to use regression. As such these "good-bad" examples were asked to criticize handling of data, modelling assumptions, interpretation of results, etc. On the whole, the course C-10 was reasonably worthwhile. And the subject was extremely interesting, very worthwhile with high potential for future use and impact on education.

THOMAS E. ELSNER
GENERAL MOTORS INSTITUTE

The Establishment of a Pilot Program at Bradley University Using Computer-Based Information Files

by

Dr. Douglas D. Early

and

Dr. Victor D. Helton

March 12, 1976

Bradley University is a medium-size, private university with a student enrollment of about 4000 and a faculty complement of 280. The University consists of nine colleges and schools, including the Graduate School. Master's degrees are offered in the Colleges of Business, Engineering and Technology and Education and in the Schools of Art, Music, and Speech and Hearing Science. In addition, most departments in the College of Liberal Arts and Sciences offer either the Master's degree or graduate-level work. The normal faculty work load is twelve credit hours or its equivalent.

Various internal agencies that fund creative or innovative work exist at Bradley. In addition to department budgets, the various deans and directors have modest contingency funds. The Board for Creative Production, Research and Sponsored Programs (CRASP) provides funds primarily for research. The Learning Resources Center (LRC), which encompasses the Audio-Visual Department, the Library, and the Computer Center, supports projects related to classroom and curricular development.

The intent of our interim project was to establish a pilot program at Bradley that would serve two purposes: We, of course, wanted to use the computer-based literature searching technique in our own research and classroom problems. In addition, we wanted to bring such procedures to the attention of a small number of our colleagues. Seeking support from departmental budgets and the dean's contingency budget, proved nonproductive. The Director of CRASP felt that the intent of our proposal did not fall within the guidelines of that agency. We then turned to the LRC. A single memorandum to the Chairman of the Physics Department was forwarded with cover letters recommending our proposal to the Director of the LRC. We asked for a modest amount: $375 to do five one-hour searches. Although our a priori chances of success were judged approximately zero, our request was very quickly funded in full.

The first step in our pilot program was to determine if equipment was already available on campus which could be used for information resources searching. Fortunately, Bradley had recently joined a computer consortium and had purchased two remote terminals [(Decwriter II (30 char./sec.)]. These terminals were interfaced to a phone line by means of a slightly modified acoustical coupler. By removing the phone line jack, the coupler could be used in the normal manner with a telephone.

We investigated long-distance phone rates and determined that the costs would be about the same for direct dial to Lockheed as they would be going through TYMSHARE. Therefore, we decided to dial Lockheed direct. Our first experience of contacting Lockheed and searching the files turned out, to our surprise, to be relatively easy. We have found that one can gain a considerable amount of information in a short time at a very reasonable cost. We have had five searching sessions. Each session required from 20 to 30 minutes of searching time at a total cost varying from about $22 to $34 per search. To date, we have only spent about one-half ($185) of the funds granted and we have searched for information on at least seven different topics.

We did not find useful information in about one-half of the topics searched. We do not have enough experience at this time to determine why this happened. It is possible that there simply was not much information about a particular topic in the file. It is more likely the case that we did not select proper keywords. We did obtain useful information on some of the topics. For example, one student was having some difficulty finding information for his independent study physics project on infrared holography utilizing CO_2 lasers. In a fifteen-minute search, we had reduced a list of several thousand articles about holography to seven pertinent articles on infrared holography and had in hand their abstracts.

The LRC has in its budget for academic year 1976-77 our request for an additional $375 to extend our pilot program. These funds are intended to be used primarily to allow more of our colleagues to gain experience in these techniques. In addition, we hope to generate more financial support by showing other agencies the results of our pilot program and, in particular, pointing out to such agencies the program's cost effectiveness. We are particularly interested in pursuing this topic with the Director of the Library. It is our feeling that we can be instrumental in establishing facilities in the Library available to all faculty members for literature searching computer-based information files. Based upon our success to date, the chances of success within a year or two look very good.